

# Sampling of the Canol Bluefish No. 1A core for conodont biostratigraphy (SR-2023-001)

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## 1. Introduction

Core Canol Bluefish 1A (302/A-37/65-00-125-45/0) is a 1079m deep core drilled a few kilometers south of Norman Wells (NT) (Fig. 1). The cored part of the Ramparts interval (2056' – 2066') of the Canol Bluefish 1A core is housed at GSC Calgary. The purpose of the sampling is conodont research on this interval. This is needed to determine the age of the rock and to verify whether this interval is actually part of the Ramparts Formation as stated by Pugh (1993). Kabanov and Gouwy (2016) suggest that this interval is part of the Imperial Formation (Loon Creek Member). Conodont faunas from the Ramparts and Imperial formations are very different from one another and that distinction would allow us to conclude in which formation the limestone interval from the core would belong.



Figure 1. location of the Canol Bluefish No. 1A

## 2. Processing procedure

About 439g of limestone was sampled in the 2056' to 2066' (626.6m – 629.7m) core interval. The sample was submitted to the GSC conodont lab where it was processed for conodonts. The processing steps conducted on the sample were (Fig. 4):

- Cataloging the sample in the database: C-663269
- Crushing to walnut sized fragments;
- Treatment with glacial acetic acid for several weeks (max. 8 weeks or till completion), weekly rinses and sieving of the non-dissolved residue;
- Boiling of the residue in household bleach to remove organic matter;
- Drying of the residue;
- Heavy liquid separation of the residue with Lithium polytungstate to separate the material with higher density (conodonts) from lighter minerals like quartz; this step was skipped because the sample residue was very small;
- Picking of microfossils from the heavy fraction under a stereomicroscope;

## 3. Results

After scanning of the heavy fraction under the stereomicroscope for conodonts, it became apparent that the fraction of the sample was barren unfortunately. This can happen, sometimes limestones do not contain the desired microfossils. Viewing of the limestone fragments before processing did not reveal any calcareous fossiliferous material (Fig. 2). Laboratory datasheets show (Fig. 5) that the rock broke down only partially (67%) even after a few weeks in acid.



Figure 2. Representative core slab section of the targeted interval in Canol Bluefish 1A.  
No macrofossils could be seen in the interval.

#### 4. Company performing the processing

The sampling of the core (Fig. 3), stored at the Core & Sample facility at the Geological Survey of Canada, Calgary Division, was done by the technical staff at the C&S based on suggestions of the researcher (S. Gouwy) and under supervision of the C & S curator Richard Fontaine. Several small blocks were sampled spread over the entire length of the interval and more than a feet distance from one another for a total of 439g.

The processing of the sample was done at the Geological Survey of Canada, Calgary Division, in the conodont processing laboratory, by technician Jennifer MacQuarry.

#### 5. Implications for the research

Paleontology could not resolve the issue with this limestone interval. The only other data available for this core is the resistivity log. Placing the limestone in the Imperial seems to be the most plausible thing. If this would be placed into the Ramparts Formation, it would mean that the underlying Hare Indian Formation would be 150m thicker than in the surrounding wells and outcrops, and that the Canol Formation would be significantly thinner than in the surrounding wells and outcrops. This would imply serious movement along minor faults in the area. This would mean that the suggestion by Kabanov and Gouwy (2016) although not supported (nor contradicted) by paleontology would be the best one.



Figure 3. View of the sampled section of the core (before sampling).

6. Data sheets conodont laboratory

Curation Number	Submitted Sample Name	Analysis	Quantity	Lab No	Completed	Date Completed	Completed By	Analysis Remark
C-663269	Canol Bluefish 1A 2056'...	Conodont - Acid chang...	1	1866-1	Y	2023/08/15	McQuarrie, Jennifer	
C-663269	Canol Bluefish 1A 2056'...	Conodont - Bleached	1	1866-1	Y	2023/08/15	McQuarrie, Jennifer	
C-663269	Canol Bluefish 1A 2056'...	Conodont - heavy liquid...	1	1866-1	N			Too small for HL
C-663269	Canol Bluefish 1A 2056'...	Conodont - in Acid	1	1866-1	Y	2023/06/27	McQuarrie, Jennifer	
C-663269	Canol Bluefish 1A 2056'...	Conodont - returned fro...	1	1866-1	Y	2023/09/08	Gouwy, Sofie	Barren
C-663269	Canol Bluefish 1A 2056'...	Conodont - sent for pick...	1	1866-1	Y	2023/08/16	McQuarrie, Jennifer	

Figure 4. Processing sheet conodont laboratory

Sample, C-663269.								
Sample Name Canol Bluefish 1A 2056'-2066'								
Sample	Location	Lithology	Chronostrat.	Lithostrat.	Comments	Conodont	PaleoReport	
Conodont								
Note: entries are optional								
<input type="checkbox"/>								
Conodont_No	Weight_In	Weight_Out	Breakdown	% Breakdown	No_Of_Slides	Storage	REMARK	
1866-1	439	144	295	67.2	0		Barren	

Figure 5. Result after processing